

CLAIMS

1. Method for sealing a filter element in a filter unit or cartridge comprising the steps of :

- 5 - molding a thermoplastic support or housing (13) in two parts, one first support part (14) and one second support part (16) for the filter element (12), each support part (14, 16) having at least one fluid flow passageway and said first support part (14) having formed therein at least one overmold flow passageway (20),
- 10 - aligning the filter element (12) between the first support part (14) and the second support part (16) of the thermoplastic support or housing (13) so that the filter element (12) covers the fluid flow passageway(s) and so that its periphery is adjacent to the overmold flow passageway(s) (20) and adjacent to the surface portions of the two support parts (14, 16) of the support or housing (13),
- 15 - holding the filter element (12) in position on the support or housing (13) and,
- 20 - injection molding a compatible thermoplastic material that flows over at least a portion of the periphery of the filter element (12) and through the overmold flow passageway(s) (20) such that an integral sealing member (18) between the two support parts (14, 16) of the support or housing (13) and the filter element (12) is
- 25 formed.

2. Method according to claim 1, characterized in that the peripheral surfaces of the first support part (14) and the second support part (16) adjacent the overmold flow passageway(s) (20) are shaped so that they may receive the thermoplastic material used in the overmolding step.

30 3. Method according to claim 2, characterized in that the peripheral surfaces of the first (14) and second (16) support parts adjacent the overmold flow passageway(s) (20) are furrow-shaped to receive the thermoplastic material used in the overmolding step.

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4. Method according to claim 2, characterized in that one of the support parts (14, 16) is cup shaped whereas the other corresponding support part (14, 16) is realized as a cover resting on said cup, the peripheral surfaces adjacent the overmold flow passageway(s) (20) being assembled by the thermoplastic material used in the overmolding step.

5. Method according to claims 4, characterized in that the two support parts (14, 16) forming the covered cup shaped housing (13) may also be provided with supplementary bonding means in order to be assembled together before the thermoplastic material is injected in the formed housing (13) during the overmolding step.

6. Method according to claim 5, characterized in that the both first (14) and second (16) support parts forming the covered cup may be screwed, glued or welded together before the thermoplastic material is injected in the formed housing (13) through the existing overmold flow passageway(s) (20) during the overmolding step.

7. Method for hermetically sealing a filter element, the method comprising the steps of :

- molding a thermoplastic support or housing (13) for the filter element (12) between two mold halves, said thermoplastic support or housing (13) being realized as first (14) and second (16) support parts which respectively have at least one opening inlet (15) and one opening outlet (17) for the passage of a fluid and said support or housing (13) having at least one aperture (21) for the passage of an overmold material,
- removing one of the mold halves to expose the surface of the first support part (14) on which the filter element (12) is to be located,
- aligning the filter element (12) so that it covers the at least one opening inlet (15) and one opening outlet (17) for the passage of a fluid, so that the filter element (12) is adjacent to the surface portions of the first support part (14) and the filter element's (12) periphery is adjacent to the at least one overmold flow passageway (20),
- placing a new mold half containing the second support part (16) over said first support part (14), the filter element (12) and the remaining original mold half, the new

mold half having portions which contact and apply pressure to the filter element (12) near the edge of the overmold flow passageway(s) (20), the new mold half and the second support part (16) forming a channel (20) along the periphery of the filter element (12) and a portion of the internal surface of the first support part (14) in the first mold half,

- injection molding a compatible thermoplastic material into the channel (20) that flows along the periphery of the filter element (12) and against the internal surface of the first support part (14) and through the at least one overmold aperture (21) to the second support part (16) to form an integral sealing member (18) between the said two support parts (14) and (16), the filter element (12) and the compatible thermoplastic material, and
- separating the mold halves and ejecting the complete support or housing (13) and its integral filter element (12).

8. Filter unit for removing contaminants from a fluid stream,

comprising :

- a thermoplastic support member or housing (13), a porous filter element (12) and a thermoplastic overmold sealing member (18),
- said thermoplastic support member or housing (13) being formed of a first support part (14) and a second support part (16), each having at least one fluid flow passageway, and at least one thermoplastic overmold flow passageway (20),
- said filter element (12) extending over said fluid flow passageway(s), its periphery adjacent to at least one thermoplastic overmold flow passageway (20) and secured to said thermoplastic first and second support parts (14, 16) by said thermoplastic overmold sealing member (18) also being disposed through the thermoplastic overmold flow passageway(s) (20):

9. Filter unit according to claim 8 further comprising means for minimizing obturation of the filter element (12) by male luer fittings, for example an anti-obturation plate (24).

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10. Filter unit according to claim 9 further comprising means for centering said filter unit (11) when used in automated applications, for example a centering aid (25).

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